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FORMATION OF MANAGEMENT MECHANISMS OF WAREHOUSE LOGISTICS IN UKRAINIAN AIC

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The article deals with the main mechanisms of management of storage logistics of AIC at the national level. The system of AIC warehouse management logistics contains five main mechanisms. An effective mechanism of warehouse logistics management is introduced. It requires a comprehensive conceptual and methodical approach to its evaluation. In the developed method, based on the system characteristics of the warehouse operation, account was taken: the policy of their use, the coordination and administration of flows, the impact of warehousing risks on economic activity. The developed mechanisms of warehouse logistics management, together with mathematical calculations, create a synergistic effect from their implementation. Further research in this area will make it possible to improve the processes of managing logistics flows at enterprises.

Keywords: forecasting, logistics, management, mechanisms, model, risks, strategy.
JEL codes: D04; M10.

1. Introduction

The movement of material flows through logistic chains is impossible without concentration the necessary amount of material resources in the established places, for preservation of which the warehouses of agricultural enterprises are intended. Warehouse assists in preserving the quality of products, materials, raw materials; increasing the rhythm and organization of both production and sales; improving the use of the territory; reducing downtime of vehicles and transportation costs; release of labor force; effective organization of sales activities, etc.

The modern composition is a complex technical structure, which consists of interconnected elements, has a certain structure and performs functions for the transformation of material flows, storage, processing and distribution of products to the consumers. At the same time, the warehouse is only an element of a higher-level system - the logistics chain, which forms the functional, technical and technological requirements for the warehouse system, sets goals and criteria for its optimal functioning and establishes conditions for cargo processing (Kachurovskyi, 2013; Potapova, Pavlenko, 2014).

Warehouses are the beginning and the end of all functional areas of logistics systems, commodity producers of wholesale trade of agro-industrial complex. The warehouse is an important element of the infrastructure of commodity markets and logistical systems that are actively developing in Ukraine. Including transportation costs, storage costs, inventory management and warehousing are the bulk of total logistics costs. For agribusiness enterprises, warehouse logistics allows coordinate and equalize demand and supply due to the formation of warehouse insurance and seasonal stocks of products; create conditions for the implementation of effective marketing strategies for the sale of goods; to satisfy consumer demand at the expense of more rapid response to the needs of residents, etc.

The purpose of the article is to synthesize theoretical and methodical principles and develop practical recommendations for improving the mechanisms of management of storage logistics of AIC. To achieve this goal, the tasks were set: to investigate the substantive essence of storage logistics of agribusiness enterprises and determine its place in effective management of economic activity; to identify peculiarities of activity AIC enterprises taking into account logistic approaches in management; to substantiate the conceptual principles of construction and implementation of the system of mechanisms for management of logistics of AIC storage; to improve scientific and methodical approaches to assessing the risks of warehouse logistics taking into account branch features of the AIC.

Methodology used in the article was general scientific and special methods and techniques of scientific research. The following methods were used: scientific abstraction (for the formation of theoretical generalizations, conclusions), historical (used during the study of the origin, formation and development of management mechanisms), monographic (for analysis of risks at the warehouses of the agroindustrial complex), statistical (when the average values are calculated), correlation-regression analysis. In the processing of research materials, modern technologies and applications were used.

The information base of the study consists of legislative and regulatory documents, materials of the State Statistics Committee of Ukraine, official reports of international organizations, official publications on warehouse logistics and logistics supply chain issues agricultural products, materials of scientific conferences, etc.

Many theoretical scholars paid great attention to the theoretical aspects, the current state and trends in the development of logistics, in particular warehouse logistics, among them (Velychko, Ramanauskas, 2016; Krykavskyy, Chornopyska, 2009; Oklander, 2000; Postan 2006). The methodology for an integrated approach to

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warehouse management, from the design of the warehouse network to optimize logistics processes in the warehouse, to determine the mechanism for managing the logistics system as the work of individual elements for obtaining a specific result using management tools was presented by (Chukhray, 2018; Trydid, Tankov, Kolodizieva, 2004).

Foreign scientists were interested in separate directions of warehouse logistics improvement (Bauersox, Kloss, 2001; Hadzhinsky, 2012; Dybskaya, 2005; Sergeyev, Eliashevych, 2014) and others. The scientific approaches for storage logistics, in particular, management mechanisms, formulated in their works, play an important role in the modern logistics theory and provide an opportunity to form an idea of importance of solving current problems of storage logistics at agricultural enterprises. Defining the mechanisms for managing the storage of agricultural holdings by logistics requires further study and research to improve and efficiently manage the logistics processes in the warehouse. All this led to the choice of the topic of research, the formulation of the goal and objectives of the article.

2. Research results and discussion

Based on 2017year statistics, and the forecast indicators of grain and legume crops, Ukraine confidently occupies the healing sites in the three largest grain exporters. 36% of all exports of grain and crops exports to the EU countries. Second place are the countries of North Africa and the Middle East. The third place in the production is shared by Japan, China, South Korea, Indonesia, and Taiwan (Potapova, Kachurovskyy, 2016; The World bank 2018).

The harvest of wheat, corn and barley form 80% of the gross output of all export potential. Due to the growing volumes of export of grain crops, forms and organization of processes of storage of products and mechanisms of management of logistics processes in warehouses of enterprises take on actuality. That is why the problem of confident management of logistic processes are very important for the positive level of functioning in supply chains (Ramanauskas, Stašys, 2015; Hutorov, 2013).

In order to forecast the production of grain crops and sunflower, we approximate the statistical data for the last 17 years (from 2000 to 2017) with one-factor econometric models (growth curves): parabolic, hyperbolic, exponential, logarithmic.

Specification of variables. Independent variable x - number of time period, and dependent Y - production of grain crops (sunflower).

$$Y=f(x) \quad (1)$$

The adequacy of the model can be determined on the basis of the determination coefficient and Fisher's F-criterion.

Table 1. Approximation of grain crops by growth curves

No.	Kind of model	Econometric model	Correlation relation	Determination coefficient	F-ratio
1.	Parabolic	$\hat{Y} = 28447 + 1027{,}3 \cdot x + 63{,}97 \cdot x^2$	0,85	73%	20,3
2.	Hyperbolic	$\hat{Y} = 52554{,}87 - 35138{,}7/x$	0,33	58%	7,9
3.	Exponential	$\hat{Y} = 26589 \cdot e^{0{,}0517x}$	0,81	65%	29,7
4.	Logarithmic	$\hat{Y} = 13338 \cdot \ln(x) + 18763$	0,75	57%	21,4

The critical value of the F-ratio, determined by the statistical distribution tables of Fisher, is 4.49. According to Table 1, the following conclusions can be drawn: the relationship between the indicators is strong (in addition to the hyperbolic model). For a hyperbolic model, the relationship between indicators is weak by the Chaddock scale. By the value of the coefficient of determination, the conclusion about the adequacy of the model is impossible, and for the F-ratio, all constructed models are adequate (the estimated value is greater than the critical one). To construct a point and interval forecast, choose a power model.

Table 2. Forecast of crops production

Years	Period	Model lny	Lower interval	Upper interval	Volume of production thousand tons*	Lower interval	Upper interval
2000	1	10,2	10,0	10,5	27999,7	22080,4	35505,7
2001	2	10,3	10,0	10,5	29485,0	22789,4	38147,8
2002	3	10,3	10,1	10,6	31049,2	23521,2	40986,6
2003	4	10,4	10,1	10,7	32696,4	24276,4	44036,6
2004	5	10,4	10,1	10,8	34430,9	25055,9	47313,6
2005	6	10,5	10,2	10,8	36257,4	25860,5	50834,4
2006	7	10,6	10,2	10,9	38180,9	26690,8	54617,2
2007	8	10,6	10,2	11,0	40206,4	27547,9	58681,6
2008	9	10,7	10,3	11,1	42339,3	28432,4	63048,4
2009	10	10,7	10,3	11,1	44585,4	29345,4	67740,1
2010	11	10,8	10,3	11,2	46950,6	30287,6	72781,0
2011	12	10,8	10,4	11,3	49441,4	31260,2	78196,9
2012	13	10,9	10,4	11,3	52064,2	32263,9	84015,9
2013	14	10,9	10,4	11,4	54826,2	33299,9	90268,0
2014	15	11,0	10,4	11,5	57734,7	34369,1	96985,3
2015	16	11,0	10,5	11,6	60797,5	35472,7	104202,4
2016	17	11,1	10,5	11,6	64022,8	36611,7	111956,6
2017	18	11,1	10,5	11,7	67419,2	37787,3	120287,8
2018	19	11,2	10,6	11,8	70995,8	39000,6	129239,0
2019	20	11,2	10,6	11,8	74762,1	40252,9	138856,3
2020	21	11,3	10,6	11,9	78728,2	41545,4	149189,3
2021	22	11,3	10,7	12,0	82904,7	42879,4	160291,2
2022	23	11,4	10,7	12,1	87302,8	44256,3	172219,2
Summ:		248,6	238,1	259,1	1205181,0	734887,5	2009400,9
Averege		13,8	13,2	14,4	66954,5	40827,1	111633,4
Averege by forecast		11,3	10,6	11,9	78938,7	41586,9	149959,0

** The theoretical volume of production of grain crops and legumes, thousand tons*

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Consequently, on average for the next five years, the production of grain and legume crops will be about 78,938.7 thousand tons or in the range from 41586.9 to 149959.0 thousand tons.

The use of the least squares method (MLS) involves the calculation taking into account internal periodic fluctuations and intervals of the forecast. The calculation of intervals allows to determine the area in which the predicted value of the parameter will be with a certain probability (probability P). The risk of error is determined by the level of significance α, which corresponds to this interval: α = 1-P (Potapova, 2017; Ushkalenko, Vovk, 2013).

Table 3. Approximation of sunflower production by growth curves

No.	Kind of model	Econometric model	Correlation relation	Determination coefficient	F-ratio
1.	Parabolic	$\hat{Y} = 2572 + 155{,}3 \cdot x + 24{,}33 \cdot x^2$	0,97	95%	141,5
2.	Hyperbolic	$\hat{Y} = 8661{,}402 - 8717{,}99/x$	0,33	58%	8,0
3.	Exponential	$\hat{Y} = 2448 \cdot e^{0{,}0965x}$	0,96	92%	188,8
4.	Logarithmic	$\hat{Y} = 3629{,}9 \cdot \ln(x) + 370{,}93$	0,83	69%	35,7

According to Table 3 easy to notice that the connection between the indicators in addition to the hyperbolic model is very strong, the determination coefficient of the parabolic and exponential model is more than 90%, so these models can be chosen for constructing forecasts. We will give an advantage to the exponential model, since for it the value of the F-ratio is greater.

The values obtained on the basis of the least squares method are averaged values that are calculated on the basis of the received empirical connection for each fixed value of the logistic process parameter for each period.

Forecast of cereals production on the foot of five years is 18758,9 thousand tons. Interval forecast - from 11648,2 ths. tons to 30223,8 thousand tons

In the conditions of price fluctuations and uncontrollability of the environment for agribusiness enterprises, there is a danger of losing the possibility of adequate strategic management and the reliability of information saturation of decision-making processes (Kachurovskyi, 2016). In this regard, there is a need for the development of specific methods and mechanisms capable of forming a stable response to perturbation of the external environment.

Table 4. Forecast of sunflower production

Years	Period	Model lny	Lower interval	Upper interval	Theoretical production of sunflower, ths. Tons	Lower interval	Upper interval
2000	1	7,9	7,7	8,1	2697,0	2261,6	3216,2
2001	2	8,0	7,8	8,2	2970,2	2453,9	3595,2
2002	3	8,1	7,9	8,3	3271,2	2662,6	4018,9
2003	4	8,2	8,0	8,4	3602,6	2889,0	4492,5
2004	5	8,3	8,1	8,5	3967,7	3134,7	5021,9
2005	6	8,4	8,1	8,6	4369,7	3401,3	5613,7
2006	7	8,5	8,2	8,7	4812,4	3690,6	6275,3
2007	8	8,6	8,3	8,9	5300,0	4004,5	7014,8
2008	9	8,7	8,4	9,0	5837,1	4345,0	7841,4
2009	10	8,8	8,5	9,1	6428,5	4714,6	8765,5
2010	11	8,9	8,5	9,2	7079,8	5115,5	9798,5
2011	12	9,0	8,6	9,3	7797,2	5550,6	10953,2
2012	13	9,1	8,7	9,4	8587,2	6022,6	12243,9
2013	14	9,2	8,8	9,5	9457,3	6534,8	13686,8
2014	15	9,3	8,9	9,6	10415,6	7090,6	15299,7
2015	16	9,3	8,9	9,7	11470,9	7693,6	17102,7
2016	17	9,4	9,0	9,9	12633,2	8347,9	19118,2
2017	18	9,5	9,1	10,0	13913,2	9057,8	21371,2
2018	19	9,6	9,2	10,1	15322,9	9828,2	23889,7
2019	20	9,7	9,3	10,2	16875,5	10664,0	26704,9
2020	21	9,8	9,4	10,3	18585,4	11570,9	29852,0
2021	22	9,9	9,4	10,4	20468,5	12555,0	33369,9
2022	23	10,0	9,5	10,5	22542,4	13622,7	37302,4
Summ:		206,1	198,3	213,9	218405,4	147212,1	326548,3
Averege:		11,5	11,0	11,9	12133,6	8178,5	18141,6
Averege by forecast		9,8	9,4	10,3	18758,9	11648,2	30223,8

There are three main types of adaptation mechanisms (Shumylova, 2006):

1. Mechanisms with passive adaptation that determine the functioning of the enterprise in a stable and more definite environment by alternatively selecting operating models from those already existing in this segment of the environment.

2. Mechanisms with active adaptation aimed at the active use of the elements of the environment to search for models of activity in the new conditions and transition to them.

3. Mechanisms aimed the formation of the external environment, used to create the most favorable conditions for the operation of the enterprise by changing the elements of the environment.

The main function of adaptive mechanisms is to choose the methods of interaction between the enterprise and the external environment. In order to

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implement selected strategies, the enterprise forms a system of mechanisms corresponding to its structure and management functions.

Warehouse logistics combines the main operational processes of enterprises, which, in different conditions of operation of the enterprise, the established system of management mechanisms should ensure the integrity and continuity of the supply chain in the process of bringing it to the consumer.

Table 5. System of mechanisms of management of warehouse logistics of AIC enterprises

The structure of the mechanisms	*Organizational mechanism of warehouse management*	*The mechanism of financial flows management*	*The mechanism of information flow management*	*The mechanism of controlling the processes of storage*	*Risk Management Mechanism*
Aim	Design of warehouse infrastructure, pipeline network or warehouse	Development of a system of financial support for warehouse logistics facilities taking into account the priority of their construction and functional purpose	Designing and developing an information system based on the principles of completeness and optimization of information traffic in the commodity network (warehouse)	Development of a comprehensive decision support system in warehouse logistics through the generation of a function of influence on the deviation of the basic parameters of functioning	Development of a decision-making system in the event of a risk storage event on warehouse logistics based on minimization of their negative impacts
Task	1. Choosing an alternative way of forming a warehouse subsystem (own construction, lease, operator's services) 2. Definition of functional properties of warehouses (ordinary, temp.) 3. Determination of technical and technological parameters of the composition (capacity, size, equipment, etc.). 4. Recruitment	1. Prioritization of objects for financing logistics warehouse infrastructure 2. Finding and identifying sources of funding 3. Determination of volumes and financing schemes 4. Preliminary estimation of economic results on the forecast amounts of financing	1. Choosing an alternative way of software hardware (own or external development) 2. Determination of areas of informatization in the warehouse (full or partial informatization) 3. Determining the model of service of the system (own staff or outsourcing) 4. Definition of information security elements 5. Identify opportunities for expansion	1. Definition of control points and indicators in the warehouse logistics system 2. Development of controlling model taking into account the regulatory monitoring regime at control points 3. Determination of deviations of parameters and degree of their threat to warehouse activity 4. Formation of the function of influence	1. Defined in the supply chain of the main locations of warehouse logistics risks 2. Carry out qualitative and quantitative analysis to determine the level of risk 3. Selection of methods and neutralization of possible risks

The system of mechanisms for the implementation of strategic warehouse logistics management is based on the adaptation of stream management to the environment conditions, the main elements of which are given in Table 6. The system

of warehouse logistics management systems of the AIC includes five main mechanisms: the organizational mechanism of warehouse management, the mechanism of financial flows management, the mechanism of information flows management, the mechanism of controlling the processes of storage and the mechanism of risk management (Potapova, 2017). The proposed mechanisms should be included in the system of strategic management as elements of the overall management system.

Table 6. System of mechanisms of management of warehouse logistics of AIC enterprises

The structure of the mechanisms	*Organizational mechanism of warehouse management*	*The mechanism of financial flows management*	*The mechanism of information flow management*	*The mechanism of controlling the processes of storage*	*Risk Management Mechanism*
Means of realization: State level	1. Creation and restructuring of state bodies on the issues of operation of logistics 2. Development of strategic plans for the development of warehouse infrastructure within the framework of an integrated logistics strategy of the state	Development and implementation of targeted state financing programs for logistic (warehouse) infrastructure, investment projects in the construction of warehouses, support of preferential crediting regime	Ensuring the functioning of a single information space (including Internet technologies) in supply chains of agricultural products	Monitoring of tasks execution, development and presentation of regulatory reports within the terms of execution of the corresponding programs.	Development and implementation of the main provisions of risk management in the strategic management of logistics warehousing
Regional level	1. Creation of coordination and advisory bodies 2. Development and implementation of regional programs for the design and construction of warehouse infrastructure	Development and financing of regional investment projects in warehouse logistics	Creation of automated control and information management centers	Monitoring of key performance indicators, analyzing and summarizing the results of program implementation, developing promising solutions	Forecasting of possible warehousing logistics risks, diversification of goods and transport flows, insurance
Enterprise level	1. Integration forms of management (consumer cooperatives, clusters, etc.). 2. Development of system logistics strategies of the enterprise	The amount of financing of enterprises, the system of distribution of profits, the system of motivations	Introduction of information and analytical system of warehouse administration within the framework of the general information conception of enterprise logistics management	Introduction of a single system of controlling in the enterprise, taking into account all the main functions	Comprehensive inventory management program, property protection, insurance, hedging of market operations

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The system of warehouse logistics management mechanisms includes a set of interrelated mechanisms, the functioning of which is aimed at the implementation of a single goal to optimize the flow of resources in warehouses in supply chains of agricultural products (Dzhonson, Donald, Vordlou, Merfyml 2002; Shramenko, Kokhanovska, 2010). The main task of constructing efficient warehouse logistics management mechanisms is to develop a set of scientific methods and tools that influence logistics processes in order to optimize and improve the existing logistic infrastructure of warehouses in the long run and in real time period (Dybskaia, 2005; Potapova, Kachurovskyi, 2014).

When storing in agriculture take into account that most products must withstand specific storage conditions. This is due to the use of specialized warehouses (elevators, refrigerators, fruit storage, etc.) for storing stocks at all stages of the material flow, from the source of its occurrence to the final consumer (Postan, 2006; Savyn, 2001). The logistics of warehousing in the AIC covers all areas and appears as an integrated part of the output from raw materials (production at agricultural enterprises to the deep stages of its processing (food processing and other processing industry) rental rates, most companies tend to decide on the construction of their own warehouses (Volynchuk, 2012). However, the construction of its own stock is always associated with significant capital expenditures, which in rendering storage facilities provide an opportunity for rapid response to market changes in accordance to the requirements for storage of products, but the significant dependence of payment from the requirements of the lesser carries a weighty one share of the risk of the warehouse infrastructure project. One of the alternative solutions can be considered the introduction of outsourcing, that is, the transfer of the warehousing function to the logistics operator. Outsourcing can be implemented in three directions: IT outsourcing (creation of information resources and servicing by outside specialized companies); production outsourcing (transfer of part of operations to third-party manufacturers); outsourcing of business processes (transfer of individual business processes to third-party executors) (Chukhray, 2007).

3. Conclusions

Effective logistics is a guarantee of ensuring the continuity of agro-logistic supply chains. Infrastructure component of logistics is determined by objects that are, to some extent, involved in the formation of the capacity of resource flows. Agro-logistic has a number of features, among them there are seasonality of the technological process of cultivation and special conditions of storage of products. This determines the need to focus on logistics warehousing in the agricultural sector.

Creating mechanisms of management logistics warehousing farms, based on the principles of consistency, adaptability must provide storage networks to change the conditions of competition and commodity markets. Due to this regard, we are talking about a system of warehouse logistics mechanisms that include components: organizational, financial, information, controlling and risk prevention. Each

component is defined by its goals, tasks and multi-level means of implementation (from micro-logistic to macro-level).

The researches have established and substantiated the conceptual principles of construction and implementation of the system of mechanisms for management of warehousing logistics of AIC on the basis of a balanced proportion of complementary adaptation mechanisms that are able to reduce the risks of emergence under the influence of the external environment. The system of warehouse management logistics management systems of AIC contains five main mechanisms: the organizational mechanism of warehouse management, the mechanism of financial flows management, the mechanism of information flows management, the mechanism of controlling the processes of storage and the mechanism of risk management.

The obtained results of the study provided an opportunity to clarify the functional characteristics of storage logistics of agribusiness enterprises, which objectively confirms the importance of using warehouses as a central link in the coordination of supply flows and distribution of material flows. In the conditions of the expanded flow of information, with the accompaniment of the material flow, there is a need for the introduction of logistics processes, which are enable to establish a monitoring mode for the occurrence of risks at control points and to regulate the received deviations.

References

Bauersoks, D., Kloss, D. (2001). Lohystyka: intehryrovannaia tsep postavok. M.: ZAO "Olymp-Byznes", 640 p.

Chukhray, N. (2007). Autsorsynh v lohistytsi: yevropeiskyi ta ukrainskyi dosvid. http://www.ukrlogist.com/article/operacionnyj-menedzhment/249.

Chukhray, N. I. (2018). Cold supply chains of thermally labile products and their competitiveness // *Lvivska politekhnika*. No. 19: 85-102.

Dybskaia, V. (2005). Lohystyka skladyrovanyia dlia praktykov. M.: Alfa-Press, 208 p.

Dzheims S. Dzhonson, Donald F. Vud, Dənyəl L. Vordlou, Pol R. Merfyml (2002). // *Sovremennaia lohystyka*: Per. s anhl, 7-e yzd. M.: Vyliams, p. 615.

Hadzhynskyi, A. (2012). Proektyrovanye tovaroprovodiashchykh system na osnove lohystyky. M. // *Izdatelskaia torhovaia korporatsyia*, 324 p.

Hutorov, O. (2013). Formuvannia efektyvnoho mekhanizmu funktsionuvannia lohistychnykh system silskohospodarskykh pidpryiemstv // *Ekonomika APK*, No. 8, 33–38.

Kachurovskyi, S. (2013). Stratehichni zavdannia v lohistyky skladuvannia v APK. // *Universytetski naukovi zapysky*, 2, 223–227.

Kachurovskyi, S. (2016). Ekonomiko-matematychna model otsinky ryzykiv skladskoi lohistyky silskohospodarskykh pidpryiemstv // *Ekonomika. Finansy. Menedzhment: aktualni pytannia nauky i praktyky*, 16, 46–54.

Krykavskyi, Ye., Chornopyska, N. (2009). Lohistychni systemy. L.: Natsionalnyi universytet "Lvivska politekhnika", p. 684.

Oklander, M. (2000). Kontury ekonomycheskoi lohystyky. K.: Nauchnaia mysl, p. 175.

Postan, M. (2006). Ekonomyko-matematycheskye modely smeshannykh perevozok. O. // *Astroprynt*, 369 p.

Potapova, N. (2017). Perspektyvy rozvytku ahrolohistyky na rynkakh silskohospodarskykh kultur // *Ekonomika, finansy, menedmzhent: akutalni pytannia nauky i praktyky,* 1, 28–36.

Potapova, N., Kachurovskyi, S. (2014). Upravlinnia lohistychnymy systemamy APK. Transformatsiia ekonomichnoho rozvytku systemy APK rehionu v rynkovykh umovakh hospodariuvannia: kolektyvna monohrafiia, 346–353.

Potapova, N., Kachurovskyy, S. (2016). Ryzyky lohistychnykh system APK. XI International scientific-practical conference // *Marketing and logistics in the system of management*, 226–227.

Ramanauskas, J. Stašys, R. (2015). Logistics in the System of Management of Enterprises in Agrarian Sector of Economy // *Management Theory and Studies for Rural Business and Infrastructure Development*. Vol. 37. No. 4: 598–602. DOI: 10.15544/mts.2015.51 [28 10 2018].

Savyn, V. (2001). Sklady: Spravochnoe posobye. M.: Delo i servys, p. 544

Serheev, V., Eliashevych, Y. (2014). Lohystyka snabzhenyia. M.: Yurait, p. 522

Shumylova, A. (2006). Mekhanyzmy realyzatsyy stratehyy orhanyzatsyy Available at: http://www.m-economy.ru/art.php?nArtId=965 [28 10 2018].

Trydid, O. M., Tankov, K. M., Kolodizieva, T. O. (2004). Vyrobnycha lohistyka. Kh.: INZhEK. p. 352

Ukraina: Otsinka spryiannia torhivli ta tranzytu (2018). The World bank. Available at: http://www.worldbank.org/en/news/press-release/2018/10/04/ukraine-economic-update-october-2018 [28 10 2018].

Ushkalenko, I., Vovk, V (2013). Zastosuvannia metodu modelei zadach prohnozuvannia sotsialno-ekonomichnoho rozvytku rehionu. T.: TNTU im. Ivana Puliuia, 21–23.

Velychko, O., Velychko, L., Ramanauskas, J. (2016). Transformation and development of production-logistics enterprises in Ukrainian agrarian economy // *Management Theory and Studies for Rural Business and Infrastructure Development*, Vol. 38. No. 1: 70–87.

Volynchuk, Yu. (2012). Teoretychnyi pidkhid do vyznachennia sutnosti lohistychnykh tsentriv // Ekonomichnyi forum. ://www.nbuv.gov.ua/portal/Soc_Gum/Ekfor/2012_ 4/1.pdf. [28 10 2018].

SANDĖLIŲ LOGISTIKOS VALDYMO MECHANIZMŲ FORMAVIMAS UKRAINOS AIC

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Straipsnyje aptariami pagrindiniai AIC saugojimo logistikos valdymo mechanizmai nacionaliniu lygmeniu. AIC sandėlių valdymo logistikos sistemą sudaro penki pagrindiniai mechanizmai. Pristatomas efektyvus sandėlių logistikos valdymo mechanizmas. Jo vertinimui reikalingas išsamus konceptualus ir metodinis požiūris. Taikant sukurtą metodą, pagrįstą sandėlio operacijų sistemos charakteristikomis, buvo atsižvelgta į sandėlių naudojimo politiką, srautų koordinavimą ir administravimą, sandėliavimo rizikos poveikį ekonominei veiklai. Sukurti sandėlių logistikos valdymo mechanizmai kartu su matematiniais skaičiavimais sukuria sinergetinį jų įgyvendinimo efektą. Tolesni šios srities tyrimai leis pagerinti logistikos srautų valdymo procesus logistikos įmonėse.

Raktiniai žodžiai: prognozavimas, logistika, valdymas, mechanizmai, modelis, rizika, strategija.

JEL kodai: D04; M10.